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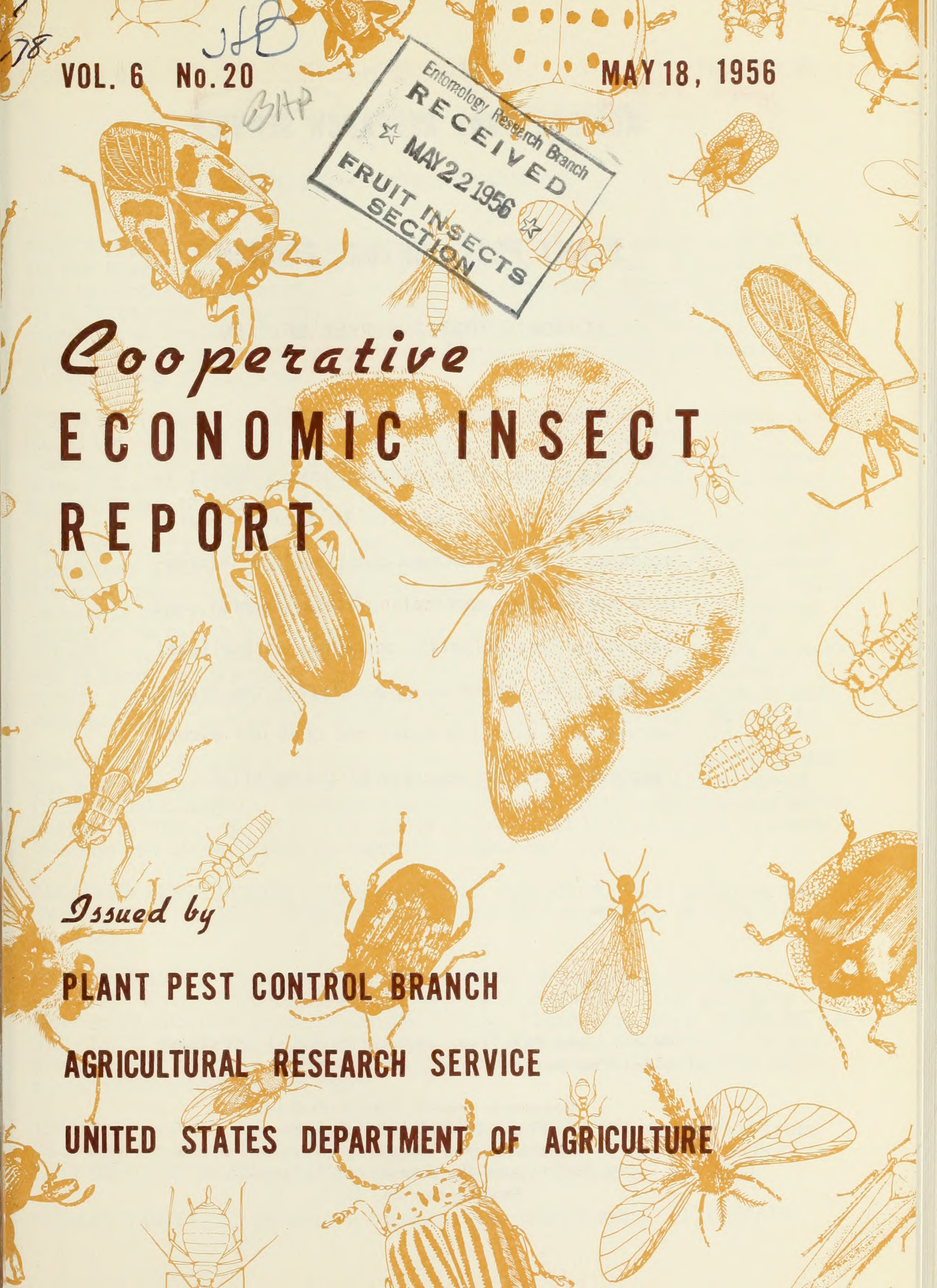

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VOL. 6 No. 20 MAY 18, 1956

Entomology Research Branch
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FRUIT INSECTS
SECTION

Cooperative
ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL BRANCH
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL BRANCH

ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

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Economic Insect Survey Section
Plant Pest Control Branch
Agricultural Research Service
United States Department of Agriculture
Washington 25, D. C.

Volume 6 May 18, 1956 Number 20

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

EUROPEAN CORN BORER survival counts in Nebraska range from 533 to 10,229 borers per acre. Winter mortality low in Kansas. Pupation 50 percent in southeast Missouri, 12 percent at Carbondale, Illinois. Survival 75 to 90 percent in southern Wisconsin. (p. 411). GRASSHOPPER hatch continues in western Oklahoma but slowed in Utah. Up to 35 nymphs per square yard in croplands in southwest Kansas and up to 15 per square yard in rangelands of this area. (p. 411).

CORN EARWORM larvae active in Arizona, Arkansas and Louisiana. (p. 411). CHINCH BUG emerging from hibernation in Illinois. (p. 411). Damaging local infestations of ARMYWORM in Eastern Arkansas. Some damage in Louisiana also. Small larvae in Tennessee, southern Illinois and southeast Missouri. (p. 412).

SPOTTED ALFALFA APHID requiring controls at Yuma, Arizona; also in Salt River Valley. Heavy infestations in southern New Mexico, southwest Missouri and south central and southeastern Kansas. (p. 413). BILLBUGS unusually heavy in Georgia. (p. 414). BROWN WHEAT MITE becoming abundant on barley in Pocatello Valley, Utah. (p. 414). ALFALFA WEEVIL control general in Virginia. Damage to unsprayed alfalfa moderate to heavy in Maryland. Larvae increasing in southern New Jersey. Adults numerous and larvae appearing in untreated fields in northern and central Utah. Larvae also active in Otero County, Colorado. (p. 417).

PEA APHID building up in southern New Jersey, generally heavy in Louisiana and damage continues in central Missouri. High counts in areas of Illinois and Colorado. Moderate to heavy in east central Kansas and above normal in Utah. (p. 415). YELLOW CLOVER APHID moderate to heavy in some red clover fields in central Illinois. (p. 415).

MEADOW SPITTLEBUG active in Illinois, Maryland, West Virginia and Tennessee. (p. 415). POTATO LEAFHOPPER appearing in Illinois. (p. 416).

CODLING MOTH emerging in southern areas of Indiana and Illinois. (p. 419). First ORIENTAL FRUIT MOTH at Vincennes, Indiana, May 7; heavier flights than usual in Canyon County, Idaho. (p. 419). EUROPEAN RED MITE requiring controls at Corvallis, Oregon. Expected to be most serious pest on apple in Minnesota this year. General infestations in southern New Jersey. (p. 420).

Additional infestations of MEDITERRANEAN FRUIT FLY reported from Dade and Broward Counties, Florida. (p. 421). May have outbreak of CITRUS RUST MITE in Florida if wet weather continues. (p. 421).

TOMATO PSYLLID general in tomato areas of Colorado. COLORADO

POTATO BEETLE damaging potatoes in Arkansas, large numbers in Tennessee and heavy in tomatoes and potatoes in some Georgia counties. (p. 421). SUGAR BEET ROOT MAGGOT widespread in Larimer and Weld Counties, Colorado. (p. 422). Outlook for potato-infesting APHIDS in Maine for 1956. (p. 423). PEA APHID requiring control on Eastern Shore of Virginia. (p. 424). STRAWBERRY LEAF ROLLER active in Utah, Oklahoma, Kansas, Indiana and Michigan. (p. 425).

TOBACCO BUDWORM heavy in several Georgia counties; eggs on tobacco in North Carolina. (p. 425). TOBACCO FLEA BEETLE heavy generally on newly-set tobacco in eastern North Carolina. (p. 425). HORNWORM larvae appearing on tobacco in Georgia. (p. 426).

BOLL WEEVIL appearing in cotton fields in Louisiana, Mississippi and Georgia. (p. 426). THRIPS active on cotton in areas of Arizona, Louisiana, Texas and New Mexico. (p. 427).

NEW STATE RECORDS for forest and shade tree insects include SMALLER EUROPEAN ELM BARK BEETLE from New Mexico. (p. 428), PINE GALL WEEVIL from Alabama (p. 428), WILLOW SAWFLY from Arkansas. (p. 428).

SCREW-WORM infestation reported from Lancaster, South Carolina. (p. 429).

Due to interest in the Entomology Research Branch publication "A Sampling Fork for Estimating Populations of Small Arthropods", it is being reproduced in this issue in its entirety as a survey method. (p. 433).

WEATHER SUMMARY. (p. 418).

LIGHT TRAP COLLECTIONS. (p. 432).

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Reports in this issue are for the week ending May 11, unless otherwise designated.

CEREAL AND FORAGE INSECTS

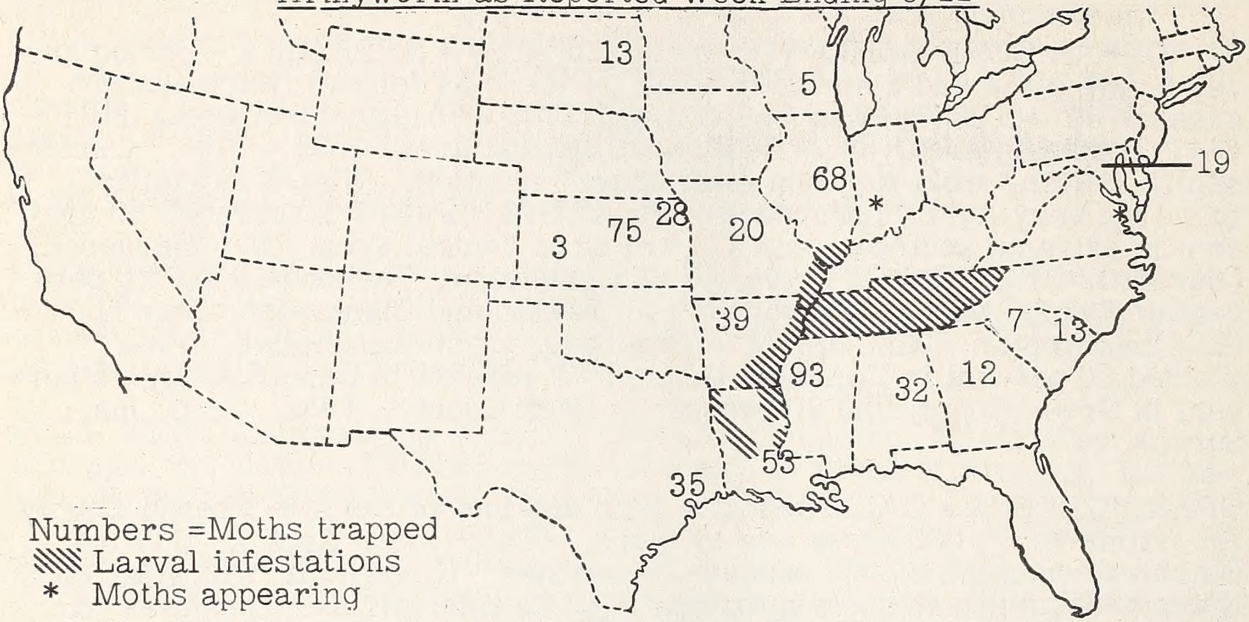
EUROPEAN CORN BORER (*Pyrausta nubilalis*) - NEBRASKA - Spring survey showing low and high borer count per acre as follows: Northeastern area, 3732 - 10,229; Loup Valley area, 1066 - 7514; central area, 1133 - 6447; southeast area, 533 - 2666; southcentral area, 1599 - 3199. (Andersen). KANSAS - No pupation in northeast counties. Winter mortality in this area very light. (Eshbaugh). MISSOURI - Pupation averages 50 percent in extreme southeast and 27 percent in central area. No emergence. (Burdett). ILLINOIS - Twelve percent putation at Carbondale and 20 percent at Ewing, May 8. No pupation at Newton and Champaign, May 11. (Ill. Ins. Rept.). WISCONSIN - Dissections of stalks for live larvae yielded 80 percent in Columbia County, 75 percent in Dane County, 85 percent in Green County and 90 percent in Rock County. (Wis. Coop. Ins. Surv.).

GRASSHOPPERS - CALIFORNIA - Hatching last of April in Fresno County. An estimated 30,000 acres are involved. (Cal. Coop. Rept.). UTAH - Hatching continued slowly because of weather. (Knowlton). NEW MEXICO - Nymphs beginning to show up in light, spotty infestations in pastures in Taos County. Nymphs also numerous in vacant lots and home gardens in Las Cruces area. (Durkin). OKLAHOMA - Hatching continuing in western and panhandle counties. Nymphal populations generally average between 8 and 16 per square yard. Most common species are: *Aulocara elliotti*, *Ageneotettix deorum*, *Cordillacris crenulata* and *Amphitornus coloradus*. Eighty to ninety percent of nymphs are first instars. An accelerated hatch is expected due to favorable climatic conditions. (Frazier). TEXAS - Heavy widespread populations hatching in pastures in Collin County. (Dahlberg). KANSAS - Survey of cropland areas in Finney, Haskell, Meade and Seward Counties showed nymphal infestations light and confined to hatching beds on roadside, fence row, weedy areas and stubble field vegetation. *Melanoplus mexicanus* and *M. confusus*)were dominant species. Nymphal populations generally averaged 15 to 35 per square yard. In rangeland areas along Cimarron River in Seward and Meade Counties nymphs generally averaged 15 or more per square yard. Spotted concentrations in hatching beds averaging 80 to 100 nymphs or more per square yard. Dominant rangeland species: *Aulocara elliotti*, *Ageneotettix deorum*, *Cordillacris crenulata*, *Amphitornus coloradus*, *Drepanopterna femoratum* and a few each of *Melanoplus mexicanus* and others. (Frazier).

CORN EARWORM (*Heliothis zea*) - ARIZONA - Damaging corn in the Yuma area. (Ariz. Coop. Rept.). ARKANSAS - Larvae light in alfalfa, vetch and clover; 1 to 2 second to fourth instars per 10 sweeps. (Warren). LOUISIANA - Larvae per 100 sweeps in crimson and white clover in following parishes: 180, Red River; 63, West Feliciana; 40, Tensas; and 27, St. Landry Parish. Corn earworm and sugarcane borer infesting seedling corn in Rapides Parish at 50 plants per 100 feet of row. (Oliver).

CHINCH BUG (*Blissus leucopterus*) - ILLINOIS - Emerging from hibernation. Found in grain, alfalfa and red clover fields. (Ill. Ins. Rept.). OKLAHOMA - Populations 0 to 3 per plant in corn fields of Adair and Ottawa Counties. Damage slight. (Coppock, Campbell).

Armyworm as Reported Week Ending 5/11



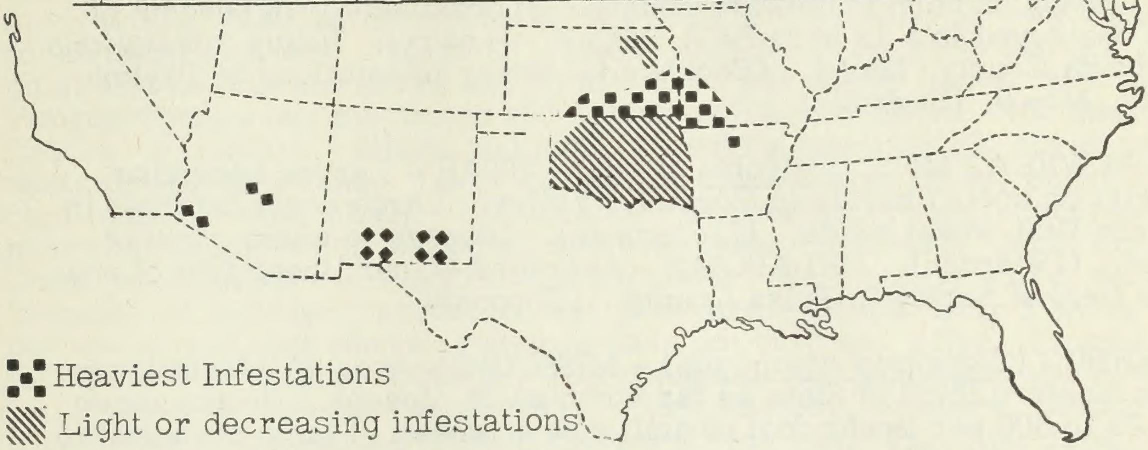
ARMYWORM (Pseudaletia unipuncta) - ILLINOIS - Populations low, few reports on rank grains and grasses in southern area. (Ill. Ins. Rept.). MISSOURI - From 2 to 11 small larvae per linear foot of drill row of barley with an average of 4-5 in the southeast area. Larval numbers in rye and wheat are somewhat less than in barley. Light moth flight continues over southern half of State. (Adkisson). TENNESSEE - Very small larvae present all across State. Difficult to tell seriousness of infestations. (Mullett). ARKANSAS - Damaging infestations have appeared in local areas of southeast and east central Arkansas on small grain. Numbers variable here and usually very light elsewhere; from 0 to 10-12 per square foot. Insecticides applied some fields in heavier areas. (Warren). LOUISIANA - Threatening oats in Red River Parish, 1 to 4 per square foot. Two fields of rye grass in East Carroll Parish practically destroyed, 10 to 40 larvae per square foot. Other lighter infestations in Natchitoches, Rapides, Red River, Caddo, Richland, West Carroll, Madison and Concordia Parishes. (Oliver).

CORN FLEA BEETLE (Chaetocnema pulicaria) - ILLINOIS - Common throughout southern half of State. Averaging 13 to 100 sweeps in grassy areas of east southeast. (Ill. Ins. Rept.). MISSOURI - Moderate to heavy numbers causing moderate to severe damage to seedling corn over the southern two-thirds of State. Counts average 4 to 5 per plant in southeast area and up to 10 to 11 in west central area. (Kyd, Thomas). OKLAHOMA - Light damage to young corn in Adair and Ottawa Counties. Populations ranged from 0 to 4 per plant. Found in scattered fields in Wagoner County. (Coppock, Campbell).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - OKLAHOMA - Began pupating in Payne County. (Arbuthnot).

SUGARCANE BEETLE (*Euetheola rugiceps*) - OKLAHOMA - A beetle, tentatively identified as *E. rugiceps,* caused damage to corn in Le Flore County. (Stiles). MISSISSIPPI - Damage to small corn plants in Alcorn, Claiborne and Hinds Counties. (Bennett, Young). ARKANSAS - Adults at lights and in light traps in numbers. Some damage to strawberries by adults. (Warren).

Spotted Alfalfa Aphid Infestation as Reported Week Ending 5/11



SPOTTED ALFALFA APHID - ARIZONA - In the Yuma area, buildup rapid and insecticide treatment regular. African alfalfa seems to withstand attack better than other varieties, especially when kept on adequate irrigation and given sufficient insecticide treatment. Predators and fungi seem to be of minor help. In Salt River Valley, a few isolated fields heavily infested and treatment regular. Twenty fields checked regularly in region about 20 miles long from Gilbert to West Phoenix. The following are average counts per trifoliate leaf: Mar. 1, 0.26; Mar. 7, 0.33; Mar. 15, 0.30; Mar. 21, 1.88; Mar. 30, 1.37; Apr. 18, 2.40; May 2, 2.80. (Ariz. Coop. Rept.). NEW MEXICO - Infestations in Las Cruces area light to medium with spotty heavy infestations. Buildups expected on regrowth when first cutting is taken off. Infestation heavy throughout Eddy County. (Durkin). NEVADA - No specimens collected from intensive survey in alfalfa fields at Luna in White Pine County. These same fields infested during September 1955. Light population of lady beetles and big-eyed bugs. COLORADO - None reported to date. (Ext. Serv., Exp. Sta.). MISSOURI - Heavy numbers and damage continue in southwest area. Few fields plowed up because of damage. (Kyd, Thomas). NEBRASKA - None were found in southeastern area. (Connin). OKLAHOMA - Most alfalfa fields showing previous extensive damage have low populations. Limited food supply and heavy lady beetle populations perhaps most important factors. All fields with appreciable number of aphids show extensive populations of lady beetles and some fields aphid populations being reduced rapidly. (Coppock). KANSAS - Heaviest infestations in south central and southeastern areas of Kansas. Populations of lady beetles increased considerably in southern counties with one report from Montgomery County (Burkhardt) of 400 to 500 lady beetle larvae per square foot. Additional fields with very light populations found in Riley, Wabaunsee and Pottawatomie Counties. No aphids found in Washington, Republic, Cloud, Ottawa, Saline and Clay Counties in north central area. (Matthew). ARKANSAS - This species and pea aphid damaging alfalfa in Izard County. Below economic levels elsewhere. (Warren).

BILLBUGS - GEORGIA - Unusually heavy infestations this year. (Johnson). Heavy on corn in Stewart County. Approximately 75 percent of stand destroyed in a 12 acre field, May 8. (Lowry). Heavy infestations in Roberta County, May 4. (Beckham). Heavy infestations in Taylor County, May 9. (Reddish).

BROWN WHEAT MITE (Petrobia latens) - UTAH - Larvae becoming abundant on spring barley in Pocatello Valley. Large scale hatching in northern Utah wheat fields. (Lieberman). Damage to wheat north of Holden. (Petersen). OKLAHOMA - Averaged 40 per linear foot of row in one field of barley in Tulsa County. (Coppock).

GREENBUG (Toxoptera graminum) - MISSOURI - Area of infestation includes western third of State as far north as St. Joseph. Counts range from 25 to 300 per linear foot of drill row of wheat. Plants advanced to stage where populations now present not causing economic damage. (Kyd, Thomas). OKLAHOMA - Populations in small grains of northeastern and eastern counties low with exception of spring-planted oats. Severe damage in scattered fields of oats; however, lady beetles very numerous and greenbug populations being reduced rapidly. (Coppock, Campbell).

ENGLISH GRAIN APHID (Macrosiphum granarium) - ARIZONA - Causing concern on wheat in Yuma area. (Ariz. Coop. Rept.).

APHIDS - ILLINOIS - Aphids, presumed to be English grain aphid, averaging 20 per square foot in small grains in southwestern Illinois. (Ill. Ins. Rept.).

CORN LEAF APHID (Rhopalosiphum maidis) - OKLAHOMA - From 0 to 50 per linear foot of row in scattered wheat fields in northeastern area. (Coppock).

FIELD CRICKETS - NEW MEXICO - Causing damage to young corn plantings in Hidalgo County. (Durkin).

A SOD WEBWORM - KANSAS - Working in pastures, lawns, and seedling corn fields in Osage, Douglas, Coffey, Franklin, Miami, Johnson and Allen Counties. Estimated counts of 3 to 4 per square foot to highs of 10 to 15 larvae per square foot reported. Some pastures have areas in field that failed to green because of larval feeding and lack of soil moisture. (Matthew).

WHEAT HEAD ARMYWORM (Faronta diffusa) - MISSOURI - Moderately heavy moth flight over central area. (Kyd, Thomas).

LESSER CLOVER LEAF WEEVIL (*Hypera nigrirostis*) - ILLINOIS - Larvae damaging clover stems throughout southern third to half of State in minor proportions. In east southeastern area, 11 percent of clover stems damaged. Adult population varies from 0 to 1.2 per square foot. (Ill. Ins. Rept.). GEORGIA - Infesting crimson clover in Morgan County at 70 adults and 50 larvae per 100 sweeps. (Johnson).

PEA APHID (*Macrosiphum pisi*) - VIRGINIA - Decreasing on alfalfa, predators active. (Muka, Rowell). NEW JERSEY - Building up very rapidly in southern counties. (Merrill). MARYLAND - From 25 to 200 per sweep on alfalfa on Eastern Shore and from 8 to 50 per sweep in central counties. Fungus disease has started to kill aphids on Eastern Shore. (U. Md., Ent. Dept.). FLORIDA - Adults and nymphs heavily infesting 300 acres of white clover at Orlando. Large patches of clover were killed, about 5 percent of area. (Denmark). LOUISIANA - Populations remain generally heavy in alfalfa, vetch and burclover over State. (Oliver). MISSOURI - Damage continues over central third of State. High temperatures allowed tremendous buildup of predators and parasites. Counts from 1000 to 3000 per sweep in fields where predators have not built up. (Kyd, Thomas). ILLINOIS - Averaging 6,500 per 100 sweeps in east southeast and 800 per 100 sweeps in west southwest areas. Northeastern, western, central and eastern area populations remain comparatively low. (Ill. Ins. Rept.). NEBRASKA - Small numbers in southeastern and south central area; 1 to 2 per 10 sweeps. (Connin). KANSAS - Moderate to heavy infestations present in alfalfa fields in counties south of Douglas and Johnson Counties of east central area. Many fields have wilted plants. Lady beetles although numerous, still not sufficient to control infestations. Non-economic to light, 5 to 40 aphids per 25 sweeps, in alfalfa of Washington, Republic, Cloud, Clay, Ottawa and Saline Counties. (Matthew). COLORADO - High populations quite general through eastern and western areas. (Ext. Serv., Exp. Sta.). UTAH - Generally present in alfalfa fields. Often in above normal abundance. (Knowlton).

YELLOW CLOVER APHIDS - ILLINOIS - Averaging 20 per 100 sweeps in southeast. (Ill. Ins. Rept.). Mo. - Moderate to heavy numbers of *Pterocallidium trifolii* in several fields of red clover in central area. Growth in some fields being stunted. Counts range from 75 to over 1000 aphids per plant. (Kyd, Thomas).

SPITTLEBUGS - VIRGINIA - Few present on alfalfa. (Muka, Rowell). NEW JERSEY - Appears to be much less numerous than previous years. (Merrill). TENNESSEE - Heavy local infestations of meadow spittlebugs occurring in alfalfa and clover in eastern area. (Mullett).

MEADOW SPITTLEBUG (*Philaenus leucophthalmus*) - ILLINOIS - Nymphal populations varied from 2 to 25 per 100 stems on hay crop. Average populations in northeastern area was 25 per 100 stems. Highest field averaged 170 per 100 stems. (Ill. Ins. Rept.). MARYLAND - Nymphs averaged 16 per 10 stems on alfalfa in Washington County and 22 per 10 stems on red clover in Talbot County. Light on clover in Prince Georges County. (U. Md., Ent. Dept.). WEST VIRGINIA - Second instars active on red clover statewide. (Dorsey, Hansen).

COWPEA APHID (Aphis medicaginis) - NEW MEXICO - Heavy on burclover in Dona Ana and De Baca Counties. (Durkin).

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) - NEW MEXICO - Infestations light to heavy but very spotty in alfalfa fields in Las Cruces area. (Durkin).

TARNISHED PLANT BUG (Lygus lineolaris) - ILLINOIS - Populations averaged 25 adults and 21 nymphs per 100 sweeps in east southeast area. Adults per 100 sweeps: 21 in west southwestern, 17 in western, 11 in eastern and 5 in northeastern areas. (Ill. Ins. Rept.). OKLAHOMA - Adults in Payne County alfalfa number 9.5 per 100 sweeps. (Fenton).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - UTAH - Conspicuously marking sweetclover generally in several northern counties. (Knowlton). SOUTH DAKOTA - Four adults per fifty sweeps in alfalfa field in Grant County. (Hantsbarger).

VETCH BRUCHID (Bruchus brachialis) - ARKANSAS - Heavy numbers on vetch as far north as Conway County. (Warren).

CUTWORMS - ILLINOIS - Populations in forage crop fields varied from 0 to 1 per square foot. (Ill. Ins. Rept.). UTAH - Damaging alfalfa. (Knowlton).

AN INDIGO GALL MOTH (Walshia amorphella) - TEXAS - Heavy local populations on sweetclover in Hunt County. (Hawkins).

LYGUS BUGS - UTAH - Adults and nymphs generally numerous in alfalfa and grain fields. (Knowlton). ARIZONA - Lygus hesperus (mainly) prevalent in several alfalfa fields in Yuma area; 10 to 20 per 100 sweeps. (Ariz. Coop. Rept.).

PAINTED LEAFHOPPER (Endria inimica) - NEBRASKA - Nymphs appearing on alfalfa in southeastern area; 1 to 3 per 10 sweeps. (Connin).

POTATO LEAFHOPPER (Empoasca fabae) - ILLINOIS - Male specimens taken in small numbers in western, central and southern areas. Females of Empoasca sp. have been much more common. (Ill. Ins. Rept.).

LEAFHOPPERS - OKLAHOMA - Adult female potato leafhoppers 4.5 per 100 sweeps in alfalfa in Payne County. First record for 1956. Adults and nymphs of Aceratagallia uhleri common in alfalfa in Payne County. (Fenton). WEST VIRGINIA - Clover leafhopper, 3 to 5 adults per sweep, on red clover in Randolph County. (Dorsey, Hansen).

MEXICAN BEAN BEETLE (Epilachna varivestis) - NORTH CAROLINA - Adults feeding on alfalfa but no larvae or eggs noted in Johnson County. (Farrier).

WHEAT STRAW-WORM (*Harmolita grandis*) - KANSAS - Infestations in fields of Saline and Ottawa Counties of central area. (Jones).

FALSE WIREWORMS (*Eleodes* sp.) - SOUTH DAKOTA - Averaging two larvae per square foot in wheat fields of Faulk County. (Hantsbarger).

SIX-SPOTTED LEAFHOPPER (*Macrosteles fascifrons*) - ILLINOIS - Common in grassy areas and in alfalfa fields, May 4. Found throughout most of State. (Ill. Ins. Rept.)

A THRIPS (*Prosopothrips cognatus*) - KANSAS - Easily found in wheat fields in central counties. Heavy infestation in one area in Lincoln County. (Painter).

WIREWORMS - NORTH DAKOTA - Heavy infestation, 3 to 4 per square foot, causing severe damage to 30-acre field of spring wheat in Cass County. (N.D. Ins. Rept. Serv.). SOUTH DAKOTA - Counts from one to two larvae of *Limonius* sp. per square foot in wheat and oat fields in northeastern counties. (Hantsbarger).

ALFALFA WEEVIL (*Hypera postica*) - NORTH CAROLINA - Halifax County added to area of known infestation (Woodard) and reported from Granville County. (Chamberlin). VIRGINIA - Spraying for control general throughout State. (Muka, Rowell). MARYLAND - Damage to unsprayed alfalfa from moderate to heavy, Worcester to southern Washington County. Larvae averaged 4 per sweep in Prince Georges County to 25 per sweep in Worcester County. Very light infestation, northwest Washington County. Making cocoons on Eastern Shore and in Montgomery County. (U. Md. Ent. Dept.). NEW JERSEY-Larvae appearing in increasing numbers from Burlington County south. Many adults in one area of Mercer County indicating there may be more activity than anticipated. (Merrill). IDAHO - Egg depositing well underway in Idaho Falls area. (Kohl). COLORADO - Larval counts of 30 per 100 sweeps in Otero County. (Exp. Sta.). UTAH-Adults numerous on untreated fields in northern and central area. Larvae appearing generally. (Knowlton). NEVADA - Adults averaging 2 per 10 sweeps in most fields. (Gallaway, May 4).

CLOVER LEAF WEEVIL (*Hypera punctata*) - ILLINOIS - Populations throughout State averaged 3 to 7 per square foot on clover. Maximum populations 15 per square foot. Larvae in cocoons as far north as Livingston County. Up to 18 percent dying of fungus disease. Damage of little importance. (Ill. Ins. Rept.). MISSOURI - Average of 3 to 5 larvae per plant in few red clover fields along Missouri River. Pupation just beginning and approximately 15 to 20 percent of larvae show evidence of a fungus disease. (Kyd, Thomas).

CLOVER ROOT CURCULIO (*Sitona hispidula*) - WYOMING - One to 4 adults per alfalfa crown in Teton and Lincoln Counties where no control practiced. (Robb).

A CLOVER WEEVIL (*Hypera meles*) - GEORGIA - Larvae per 100 sweeps on crimson clover: Morgan County 250, (Johnson); Fayette County 2400 (Tippin, May 7).

ARMY CUTWORM (Chorizagrotis auxiliaris) - NEBRASKA - Small numbers occur in alfalfa in Knox, Cedar, Boyd, Holt, Antelope, Pierce and Boone Counties; from one to two per square yard. (Andersen). OKLAHOMA - From 3 to 15 per square foot in alfalfa in Pottawatomie County. (Stiles).

VARIEGATED CUTWORM (Peridroma margaritosa) - ILLINOIS - Average 1.3 per 100 sweeps in clover and alfalfa fields in east southeastern areas. (Ill. Ins. Rept.). ARKANSAS - Infestations remain much lighter than in 1954-55. (Warren).

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WEATHER BUREAU'S 30-DAY OUTLOOK

Mid-May to Mid-June

1956

The Weather Bureau's 30-day outlook for the period from mid-May to mid-June calls for temperatures to average above seasonal normals in the southeastern quarter of the nation and in the West Coast states. Below normal temperatures are predicted over the Great Lakes, Northeast, Northern Plains, and Central Plateau. In other areas, mean temperatures should be near normal. Rainfall is expected to exceed normal in the Missouri and Mississippi Valleys and the Great Lakes Region. Subnormal amounts are indicated west of the Continental Divide and in the Southeast, and near normal elsewhere. (Released by Weather Bureau, May 14.).

Weather forecast given here is based on the official 30-day "Resume and Outlook", published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price $4.80 a year, $2.40 for six months.

WEATHER FOR THE WEEK ENDING MAY 14, 1956

Springlike variability characterized the weather of the past week with unseasonable cold alternating with extreme warmth, except for the southern states where agricultural interests welcomed very warm weather following a period of good rains. Tornadoes dominated the weather headlines with Michigan and Kansas suffering most although the first tornado of the year was reported in Minnesota, a Cleveland suburb suffered considerable damage and high winds were reported from western Pennsylvania. The High Plains and Southwest still suffer from lack of moisture and strong winds continue to stir up local duststorms.

Precipitation along the west coast has continued rather late in the spring. Blue Canyon, Calif., reports the second wettest May of record already. Washington and Oregon also reported continued precipitation with local hail causing slight damage and a heavy shower above Connell, Washington, washing out an earth dam on the 8th with 2 feet of water flooding the town.

(Weather continued on page 431.

FRUIT INSECTS

CODLING MOTH (*Carpocapsa pomonella*) - INDIANA - One percent emergence in Vincennes area and about 47 percent of overwintering larvae have pupated. (Lamansky). ILLINOIS - First emergence at Belleville, May 6 and May 9 at Carbondale and Anna. (Chandler). COLORADO - Emerging in numbers week of May 1. (Exp. Sta.). KANSAS - Pupation about 50 percent complete in northeastern orchards. (Eshbaugh).

PLUM CURCULIO (*Conotrachelus nenuphar*) - INDIANA - Difficult to find by jarring in Lawrence and Orange Counties. (Marshall). ILLINOIS - Only four curculios jarred from trees to May 9 compared with 30 in 1955 and 102 total in 1954, in unsprayed peach orchard at Mounds, Pulaski County. (Chandler). GEORGIA - Mature larvae pupating in commercial orchards. No adults taken but infested drops found in orchards. (Snapp, May 7). MICHIGAN - Adults in an abandoned orchard in Baroda, May 8. (Hutson).

ORIENTAL FRUIT MOTH (*Grapholitha molesta*) - INDIANA - First moth catch in bait traps May 7 in Vincennes area. (Lamansky). IDAHO - Heavier than normal flights of moths in peach orchards of Canyon County. (Vail).

PEAR PSYLLA (*Psylla pyricola*) - OREGON - Earliest first brood nymphs transforming to adults in Jackson County, May 9. (Gentner).

RED-BANDED LEAF ROLLER (*Argyrotaenia velutinana*) - NEW JERSEY - Moths active throughout State. (Merrill).

APPLE APHID (*Aphis pomi*) - ILLINOIS - Moderately heavy at Grafton and Belleville. (Chandler).

APPLE GRAIN APHID (*Rhopalosiphum fitchii*) - OREGON - Winged forms beginning to leave pear trees in Jackson Country, May 2. (Gentner). INDIANA - Abundant in apple orchards in Lawrence and Orange Counties. (Marshall).

ROSY APPLE APHID (*Anuraphis roseus*) - INDIANA - Increasing rapidly and requiring control in Orleans area. (Marshall). ILLINOIS - Much lighter at Grafton and Belleville, but evidently starting. Predators and parasites beginning to increase. (Chandler). WEST VIRGINIA - One infestation on apple in Jefferson County. (Hamstead).

GREEN PEACH APHID (*Myzus persicae*) - OREGON - Winged forms beginning to leave peach trees in Jackson County, April 30. (Gentner). NEW MEXICO - Heavy on peach trees in Rio Arriba and Valencia Counties. (Durkin).

YELLOW SPIDER MITE (*Eotetranychus carpini borealis*) - OREGON - Adults common in apple orchards in Benton County, May 8. An early occurrence. (Jones).

TENT CATERPILLARS - NEW YORK - More numerous in Rockland County this year than in last several years. (Wkly. Rept.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - MAINE - Occurring in apple trees in Manchester and Hebron (Poray) and hatched in South Bridgton (Hilborn).

EUROPEAN RED MITE (Metatetranychus ulmi) - NEW JERSEY - Hatching rapidly in southern area. Practically all orchards infested, some with 200-300 larval forms per leaf. (Merrill). INDIANA - All overwintering eggs in apple orchards in Vincennes area have hatched. On May 8, counts on 25 leaves was 68 eggs, 14 nymphs and 11 adults. (Lamansky). More common than Tetranychus telarius on leaves of apples in Lawrence and Orange Counties. (Marshall). MINNESOTA - Expected to be most serious pest of apples in 1956. (Minn. Cir. 298). WEST VIRGINIA - Populations low on apple in Jefferson County. (Hamstead). NEW YORK - Eggs hatching in Orange and Monroe Counties. (Wkly. Rept.). OREGON - Built up to economic infestations on peaches in Corvallis area, week of May 6. Control measures being used. (Jones).

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) - MASSACHUSETTS - Adults feeding and depositing eggs. Some eggs have hatched. (Crop Pest Cont. Mess.). OREGON - Adults common in apple orchards in Benton County, May 8. (Jones).

CLOVER MITE (Bryobia praetiosa) - UTAH - Marking foliage in some northern orchards and occasionally numerous on undercover legumes. (Knowlton). OREGON - Abundant on Elberta peaches in Benton County, May 8. (Jones). MICHIGAN - Rather heavy populations in several backyard plantings of fruit trees in Wayne, May 9. (Hutson).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - WEST VIRGINIA - Populations low on apple in Jefferson County. (Hamstead). NEW YORK - Moths and egg masses in several orchards, May 10 in Ulster and Orange Counties. Egg-laying light in Monroe County. (Wkly. Rept.).

A LEAF MINER (Lithocolletis sp.) - OREGON - Adults plentiful in some apple orchards in Jackson County and laying eggs on undersides of young leaves, May 2. (Gentner).

CATFACING INSECTS - INDIANA - Four stink bugs were jarred from five trees in a commercial orchard in Vincennes area, May 8. (Lamansky). Stink bugs very active in peach orchards in Lawrence and Orange Counties. (Marshall). ILLINOIS - Catfacing expected to be less at Mounds. Only moderate numbers of stink bugs appearing. (Chandler). GEORGIA - Peaches injured by stink bugs quite common in some commercial orchards. More numerous this year. (Snapp, May 4). UTAH - Numerous in orchards where undercover plants abundant. (Knowlton).

JUNE BEETLES - SOUTH CAROLINA - Large numbers of *Phyllophaga arkansana* on pecans at Cheraw, Chesterfield County, April 30. Det. D Dunavan. (Gaffney).

SHOT-HOLE BORERS - OREGON - Attacking winter-damaged English walnuts in McMinnville area, May 7. (Roberts). UTAH - Seriously damaging winter-injured peach trees in a Providence orchard. (Knowlton).

OBLIQUE-BANDED LEAF ROLLER (*Archips rosaceana*) - OREGON - Damaging young prune whips in Polk County. (Roberts).

A FROSTED SCALE (*Lecanium pruinosum*) - CALIFORNIA - Spotted infestation in an English walnut orchard ranged from an occasional mature adult on a twig unit of 12 inches to a heavy population of females packed close enough to cause body distortion. Some eggs had developed. (Cal. Coop. Rept., April).

SIX-SPOTTED MITE (*Eotetranychus sexmaculatus*) - FLORIDA - Infestations continued to increase and will reach peak in week or two. (Pratt, Thompson, Johnson, May 5).

MEDITERRANEAN FRUIT FLY (*Ceratitis capitata*) - FLORIDA - Found in commercial citrus grove four miles west of Davis, Broward County. Other infestations in Hollywood and Ft. Lauderdale. (Denmark).

CITRUS RUST MITE (*Phyllocoptruta oleivora*) - FLORIDA - Activity increasing with 66 percent of groves infested. Outbreak expected if wet weather continues. (Pratt, Thompson, Johnson, May 5).

A FALSE CHINCH BUG (*Nysius* sp.) - ARIZONA - Large numbers on ground in citrus grove in Maricopa County and beginning to feed on foliage. (Ariz. Coop. Rept.).

CITRUS RED MITE (*Metatetranychus citri*) - FLORIDA - Activity high with 85 percent of groves infested but a leveling off expected. (Pratt, Thompson, Johnson, May 5).

CURRANT FRUIT FLY (*Epochra canadensis*) - OREGON - First emergence in Willamette Valley week of April 15. (Every).

A TINGID (*Corythucha* sp.) - OREGON - Causing moderate damage to apples in local areas in Willamette Valley. (Every).

TRUCK CROP INSECTS

TOMATO PSYLLID (Paratrioza cockerelli) - COLORADO - Averaging 30 per 100 sweeps on bindweed in Otero and Bent Counties. Distribution general in tomato-growing areas, May 3. Adults 10 per 100 sweeps on matrimony vine and five per 100 sweeps on bindweed in Larimer County, May 8. (Exp. Sta.).

SOUTHERN GREEN STINK BUG (Nezara viridula) - GEORGIA - Heavy infestations causing fruit to drop from commercial tomatoes in Tattnall County. (Johnson, May 4).

SEED-CORN MAGGOT (Hylemya cilicrura) - UTAH - Causing spotted damage to peas and other large garden seeds in northern area. (Knowlton). OREGON - Larvae killed 15-20 percent of all seedling sprouts on two 5-acre plantings of beans, cantaloupes and watermelons in the Milton-Freewater area, May 1. (Brown). NORTH CAROLINA - Severe infestations locally in tomato and cabbage plants in Warren County. (Scott).

POTATO APHID (Macrosiphum solanifolii) - MARYLAND - Light on newly-set tomatoes in Somerset County. (U. Md., Ent. Dept.).

LEAF-FOOTED BUG (Leptoglossus phyllopus) - GEORGIA - Heavy infestations on potatoes in Irwin County. (Leger, May 3).

GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) - PENNSYLVANIA - Difficult to control on tomatoes in Mifflin and Lawrence Counties. (Adams).

CUTWORMS - MARYLAND - Light damage to tomatoes in Worcester County. (U. Md., Ent. Dept.).

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - KANSAS - In most gardens in the State. (Matthew). ARKANSAS - Damaging potatoes over State. (Warren). TENNESSEE - Large numbers occurring in State. (Mullett). GEORGIA - Heavy infestations on potatoes in Baldwin County. Heavy on tomatoes in Cook and Coffee Counties. (Johnson, May 9). NORTH CAROLINA - Adults and larvae injuring potatoes in Granville County. (Chamberlin).

PEA WEEVIL (Bruchus pisorum) - OREGON - Above-normal populations on peas in Marion County, April 18. (Hanna).

ASPARAGUS BEETLE (Crioceris asparagi) - OREGON - Infesting most fields of asparagus in Milton-Freewater area, May 1. (Brown).

SYMPHYLIDS - OREGON - Destroying a new planting of sugar beets in Ontario, May 3. New host record for State. (Bond).

SUGAR BEET ROOT MAGGOT (Tetanops myopaeformis) - COLORADO - From 80-90 percent of maggots in pupation, May 3 compared with peak emergence in 1955 during last week of May. Quite widespread in Larimer and Weld Counties. (Exp. Sta.).

Abundance of Aphid Eggs on Overwintering Hosts of Potato-infesting Aphids in Northeastern Maine

A survey was made between April 18 and April 27, 1956 to determine the abundance of viable aphid eggs of four species of potato-infesting aphids currently present in northeastern Maine on more important primary hosts. Eggs of buckthorn aphid (Aphis abbreviata) were found on alder buckthorn at all of eight sampling stations. Fully-distended eggs were less than two-thirds as abundant as in spring of 1955. If conditions are favorable, large buckthorn aphid populations may be expected on potatoes later in summer. Eggs on Canada plum -- a primary host of green peach aphid (Myzus persicae) -- were found in 40 percent of 25 thickets sampled, compared with 14 of 25 thickets sampled in fall, 1955. Abundance of eggs on this host is 37 percent of the 10-year spring average. Under existing conditions, very small populations of the green peach aphid are likely to occur on Canada plum during the spring or on potatoes later in the season. It could occur more generally in potatoes this year than in 1955 because it was found breeding in a larger number of thickets in the fall of 1955 than in 1954. Most of the thickets infested in fall of 1955 were in the southern half of Aroostook County, so potatoes are expected to be more generally infested there than elsewhere in the County.

Aphid eggs deposited around buds or in limb crotches of swamp rose -- the most important primary host of potato aphid (Macrosiphum solanifolii) -- were found at all of the 12 sampling stations. Egg abundance on swamp rose was 94 percent of the 10-year average or 2.4 times the comparable figure for 1955. Potato aphids should now be about 2.7 times as numerous as they were at this time in 1955. With conditions favorable, appreciable numbers of potato aphids could develop generally on swamp rose and damaging populations could develop later on potatoes. Eggs on hawkweed (Hieracium spp.) -- primary hosts of foxglove aphid (Myzus solani) -- were found at five of 10 sampling stations. Counts are likely to be considerably below those of 1955. First-instar stem mothers were found on swamp rose at Houlton, April 18 and at Ashland, April 20. Hatching was still in progress April 27. (Shands, Simpson, Wave).

SPRINGTAILS - MARYLAND - Caused light damage to newly-sprouting beans in Worcester County. Also on broccoli and radishes in Montgomery County. (U. Md., Ent. Dept.).

MEXICAN BEAN BEETLE (Epilachna varivestis) - MISSISSIPPI - Adults on beans in Oktibbeha County. (Hutchins). NORTH CAROLINA - Attacking bean seedlings in Granville County. (Chamberlin). Prevalent and control necessary in Duplin County. (Farrier). VIRGINIA - Light on young snap beans in eastern area. (Brubaker, Greenwood, Hofmaster).

GARDEN SPRINGTAIL (Bourletiella hortensis) - VIRGINIA - Causing minor injury to young beans, turnips and mustard and to potatoes in eastern area. (Brubaker, Greenwood, Hofmaster).

BEAN LEAF BEETLE (*Cerotoma trifurcata*) - TENNESSEE - Attacking early beans. (Mullett). NORTH CAROLINA - Attacking young beans in Granville County. (Chamberlin). MARYLAND - First adults of season on snap beans in Worcester and Prince Georges County. (U. Md., Ent. Dept.).

CORN EARWORM (*Heliothis zea*) - ARIZONA - General in one late field of lettuce at Deer Valley, Maricopa County and causing moderate damage in a 120-acre untreated field. (Ariz. Coop. Rept.). COLORADO - Evidence of successful overwintering of larvae in Otero County. (Exp. Sta.).

FLEA BEETLES - UTAH - Seriously damaging turnips and radishes and moderately damaging tomatoes and sugar beets in Davis County. (Knowlton, Stokes). COLORADO - Damage from *Systena taeniata* larvae in sugar beets in Larimer County. (Exp. Sta.). VIRGINIA - Young turnips and mustard being injured and increasing amount of injury to potatoes by *Epitrix cucumeris* and *E. hirtipennis* in eastern area. (Brubaker, Greenwood, Hofmaster). MARYLAND - Average five per plant on potatoes in Wicomico County and two per plant on newly-set tomatoes in Somerset County. Light damage. Damaging cabbage and radishes in Montgomery County. (U. Md., Ent. Dept.). NEW YORK - Attacking newly-set cabbage in Orange County. (Wkly. Rept.).

CABBAGE APHID (*Brevicoryne brassicae*) - VIRGINIA - Some colonies persist on cabbage in eastern area although colonies reduced by natural enemies. (Brubaker, Greenwood, Hofmaster).

CABBAGE MAGGOT (*Hylemya brassicae*) - MASSACHUSETTS - Eggs reported from all parts of State. (Crop Pest Cont. Mess., May 15). Peak egg-laying will be later than 1955. (Bourne). NEW JERSEY - Adults becoming active and a few eggs present. (Merrill).

IMPORTED CABBAGEWORM (*Pieris rapae*) - NEW JERSEY - Adults numerous throughout State. (Merrill). VIRGINIA - Injuring young cabbage in eastern area. (Brubaker, Greenwood, Hofmaster).

GREEN PEACH APHID (*Myzus persicae*) - OKLAHOMA - Average of 8.5 per leaf from two spinach fields in Coweta area, Wagoner County. (Coppock). VIRGINIA - Light to moderate numbers on spinach. On older spinach considerable parasite and disease activity. (Brubaker, Greenwood, Hofmaster).

PEA APHID (*Macrosiphum pisi*) - VIRGINIA - Light to moderate on garden peas in Norfolk area and requiring control on Eastern Shore in commercial crops. (Brubaker, Greenwood, Hofmaster).

PEA LEAF WEEVIL (*Sitona lineata*) - OREGON - Light infestations on peas in Canby area, May 1. Damage to lower leaves indicates early spring infestations. (Hanna).

TWO-SPOTTED SPIDER MITE (*Tetranychus telarius*) - IDAHO - Emerging from hibernation and causing some injury to raspberries in Moscow area. (Manis).

TORTOISE BEETLES - MISSISSIPPI - Adults and larvae damaging sweet-potato leaves in Oktibbeha and Webster Counties. Species most common are *Metriona bivittata*, *M. bicolor* and *Chelymorpha cassidea*. (Hester).

STRAWBERRY ROOT WEEVIL (*Brachyrhinus ovatus*) - NORTH CAROLINA - Local severe infestations in strawberries in Vance County. (Scott, Dogger).

STRAWBERRY LEAF ROLLER (*Ancylis comptana fragariae*) - UTAH - Adults abundant in many Weber, Davis and Salt Lake County strawberry patches. (Knowlton). OKLAHOMA - Light infestation in Adair County. (Coppock, Campbell). KANSAS - Light infestations in northeastern area. Some clipping of buds and both eggs and larvae in many injured blossoms. (Eshbaugh). INDIANA - First brood of larvae hatched and feeding heavily on berries in Lawrence and Orange Counties. (Marshall). MICHIGAN - Eggs in a planting at Baroda, May 7. (Hutson).

SPITTLEBUGS - IDAHO - Hatching on strawberries in the Coeur d'Alene area. Ten to 50 percent of strawberry plants infested. (Barr).

ONION MAGGOT (*Hylemya antiqua*) - NEW JERSEY - Adults becoming active on onions and requiring control. (Merrill).

OMNIVOROUS LEAF TIER (*Cnephasia longana*) - OREGON - Light infestations on strawberries in Woodburn and Hillsboro areas, April 26. (Hanna).

MEADOW SPITTLEBUG (*Philaenus leucophthalmus*) - OREGON - Scattered hatching on strawberries on April 25 in southern part of Washington County. (Hanna). MICHIGAN - Hatching in strawberry bed at Sodus. (Hutson).

TOBACCO INSECTS

TOBACCO BUDWORM (*Heliothis virescens*) - GEORGIA - Heavy infestations on tobacco in Worth, Tift, Berrien, Cook, Lowndes, Lanier, Atkinson, Coffee and Telfair Counties. General throughout tobacco area. (Johnson, May 9). NORTH CAROLINA - First eggs of season on tobacco, May 10. (Lawson).

TOBACCO FLEA BEETLE (*Epitrix hirtipennis*) - GEORGIA - Moderate infestations in Worth County. (Johnson, May 9). NORTH CAROLINA - Heavy generally on newly-set tobacco in Edgecomb, Nash, Pitt, Wilson, Greene, Columbus and Johnston Counties. (Guthrie).

CUTWORMS - NORTH CAROLINA - From 10-15 percent of tobacco plants cut in a field of Robeson County. (Jones).

HORNWORMS (Protoparce spp.) - GEORGIA - Light infestations on tobacco in Worth and Tift Counties. First report of year. (Johnson, May 8).

GREEN PEACH APHID (Myzus persicae) - GEORGIA - Moderate infestations in Berrien County. Light infestations in Worth, Tift, Cook, Lowndes, Lanier and Atkinson Counties. (Johnson, May 9).

SOUTHERN GREEN STINK BUG (Nezara viridula) - GEORGIA - Heavy infestations in Worth, Tift, Berrien, Cook, Lowndes, Lanier, Atkinson, Coffee and Telfair Counties. General throughout tobacco belt. (Johnson, May 10).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - NORTH CAROLINA - Few reports of plant bed damage in Granville County. (Chamberlin).

COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Control programs underway in lower Rio Grande Valley. Two fields north of Santa Rosa had heavy infestation. (Deer). Survival as of May 11 in McLennan and Falls Counties, Texas was 0.04 compared with 2.4 in 1955. (Parencia et al.). LOUISIANA - Beginning to occur on cotton in several fields in northeastern area. (Oliver). Percent survival in cages to May 11 at Tallulah was 0.78. (Gaines, Pfrimmer et al.). MISSISSIPPI - Live weevils in cotton fields in Amite County. (Bennett). GEORGIA - Heavy infestations in Burke and Tift Counties. (Morgan, May 9).

BOLLWORMS - TEXAS - Found in most fields of lower Rio Grande Valley. Most larvae large and few eggs found, indicating injury may disappear. (Deer).

PINK BOLLWORM (Pectinophora gossypiella) - TEXAS - Rosetting a few blooms in lower Rio Grande Valley. (Deer). Emergence in tests in McLennan and Falls Counties was 501 compared with 3697 in 1955. (Parencia et al.).

SPIDER MITES - TEXAS - A few in most fields in lower Rio Grande Valley. (Deer).

APHIDS - ARIZONA - Light but general on check plots at Yuma, Tempe and Bowie. Good populations of predators, mainly Hippodamia sp. (Ariz. Coop. Rept.). NEW MEXICO - Light to medium infestations on cotton in Las Cruces area. (Durkin). TEXAS - Declined in lower Rio Grande Valley, but a few fields requiring control. (Deer). LOUISIANA - Aphids in Tallulah area average 24 per 20 plants and present in five of six fields examined. (Gaines, Pfrimmer et al.).

WIREWORMS - SOUTH CAROLINA - Infestation, probably Conoderus falli injured 30 percent of plants near Estill, Hampton County, May 2. Det. D. Dunavan. (Huff).

THRIPS - ARIZONA - From 1-2 per plant at Yuma, May 1 on 2 1/2 acre check plot and very abundant Yuma area, May 7, averaging 10 or more per plant. (Ariz. Coop. Rept.). LOUISIANA - In four of six fields examined and light in most fields at the rate of 7.4 per 20 plants. (Gaines, Pfrimmer, et al.). TEXAS - Considerable increase in McLennan and Falls Counties. Injurious infestations in seven of 13 fields inspected. Infestations ranged from 0.2 to 4.6 per plant. (Parencia et al.). MISSISSIPPI - Light to medium damage some fields. Some fields treated in south delta area. (Merkl et al.). NEW MEXICO - Infestations of *Frankliniella* sp. and *Thrips tabaci* reported in some cotton fields near Las Cruces but populations low. (Durkin).

COTTON FLEAHOPPER (*Psallus seriatus*) - TEXAS - Emergence in hibernation cages in McLennan and Falls Counties increasing since rains. Seasonal emergence to May 11 is 28,915 compared with 22,488 in 1955. (Parencia et al.). ARKANSAS - Adults collected from roadsides in Clark County. Up to 10 per sweep. In complex with tarnished plant bug. (Warren).

BEET ARMYWORM (*Laphygma exigua*) - ARIZONA - Larvae in second instar at 1-2 per plant in check plot at Yuma, May 1 and causing minor damage in restricted parts of field. Very light damage on test plots at Tempe and Bowie. (Ariz. Coop. Rept.). NEW MEXICO - One light infestation in cotton in Las Cruces area. (Durkin).

CUTWORMS - LOUISIANA - *Peridroma margaritosa* severely damaging localized spots of cotton in Caddo Parish. Apparently migrating into cotton from vetch fields plowed under. (Oliver). MISSISSIPPI - *Agrotis ypsilon* and *Peridroma margaritosa* caused damage in many fields where cotton followed spinach or other cover crops. (Merkl et al.).

BLACK CUTWORM (*Agrotis ypsilon*) - MISSISSIPPI - Serious damage to small cotton in Bolivar and Washington Counties. (Hunsucker, May 4). Causing damage to small plants in southern area and in delta. (Bennett).

A SERPENTINE LEAF MINER (*Liriomyza* sp.) - ARIZONA - Moderate but sub-economic on parts of 10 acres of cotton at Tempe, Maricopa County. (Ariz. Coop. Rept.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

EUROPEAN PINE SHOOT MOTH (*Rhyacionia buoliana*) - WISCONSIN - Reported on mugho pine in Door County for first time. (Chambers).

PINE SAWFLIES - MARYLAND - *Neodiprion pratti pratti* larvae feeding extensively on Virginia pine in Montgomery and Howard Counties. (U. Md., Ent. Dept.). ARKANSAS - *Neodiprion taedae linearis* larvae mature in most areas of infestation. Feeding locally severe in Fordyce area. Two-hundred acres treated with satisfactory results. (Warren).

SMALLER EUROPEAN ELM BARK BEETLE (*Scolytus multistriatus*) - NEW MEXICO - One dead specimen collected from Chinese elm in Albuquerque. (Massey). First report of this species from New Mexico.

COOLEY SPRUCE GALL APHID (*Chermes cooleyi*) - IDAHO - Hatching occurring in Lewiston area on red fir. (Portman).

BLACK TURPENTINE BEETLE (*Dendroctonus terebrans*) - ARKANSAS - Strong indication that populations becoming more prevalent in southern area pine timber stands. (Ark. Forestry Comm., May 7).

BIRCH LEAF MINER (*Fenusa pusilla*) - RHODE ISLAND - Adults active and ovipositing on scattered trees in Cranston. (Mathewson).

PINE GALL WEEVIL (*Podapion gallicola*) - ALABAMA - Taken from galls on pine in Auburn area. Determined R. E. Warner. (Pearson). First report of this species from Alabama.

NANTUCKET PINE MOTH (*Rhyacionia frustrana*) - MISSISSIPPI - Larvae feeding on pine twigs in Jasper County. (Hutchins).

PINE BARK WEEVILS - ARKANSAS - Widely scattered activity in southern area. Some activity in Ashley County. (Ark. Forestry Comm., May 7).

PINE ENGRAVER (*Ips pini*) - PENNSYLVANIA - Adults in trees in numerous plantations generally, in Bedford and Juniata Counties. (Udine).

PINE LEAF APHIDS - ARKANSAS - Some increase in activity reported and some heavy infestation in southwestern Ashley County but natural control sufficient to check infestations. (Ark. Forestry Comm., May 7).

PINE NEEDLE SCALE (*Phenacaspis pinifoliae*) - PENNSYLVANIA - Severe on ornamental spruce planting and an occasional three to four-year-old Scotch pine attacked in Bedford County. (Udine).

PINE TORTOISE SCALE (*Toumeyella numismaticum*) - PENNSYLVANIA - Moderate infestations on Scotch pine plantation in Bedford County. (Udine).

TULIPTREE SCALE (*Toumeyella liriodendri*) - PENNSYLVANIA - Heavy infestations on native tuliptrees in Juniata County. Branches completely covered. (Udine).

WILLOW SAWFLY (*Nematus ventralis*) - ARKANSAS - Attacking willow in Washington-Benton area. First report for State. (Warren).

HOLLY LEAF MINER (Phytomyza ilicis) - OREGON - Adults began emergence in Portland area week of May 5. (Larson).

A HOLLY BUD MOTH (*Rhopobota naevana ilicifoliana*) - OREGON - Larvae about 3/16 inch long and feeding on developing buds of holly in Multnomah and Clackamas Counties, May 4. (Larson).

MULBERRY WHITEFLY (Tetraleurodes mori) - NORTH CAROLINA - From 15-20 pupae per leaf on Kalmia latifolia in a local infestation in Buncombe County. (Palmer).

A LEAF ROLLER (Fascista cercerisyella) - OKLAHOMA - First-instar larvae abundant on redbud in Payne County. (Fenton).

CITRUS RED MITE (Metatetranychus citri) - NORTH CAROLINA - Local defoliation of Eleagnus punctata in Wake County. (Farrier).

BOXWOOD PSYLLID (Psylla buxi) - MARYLAND - Cupping of leaves on boxwood in Montgomery County. (U. Md., Ent. Dept.).

BOXWOOD LEAF MINER (Monarthropalpus buxi) - RHODE ISLAND - Heavy infestation on several plants in Johnston. (Mathewson). WEST VIRGINIA - Extremely heavy infestation on boxwood in Jefferson and Berkeley Counties. (Dorsey, Hansen).

BOXELDER APHID (Periphyllus negundinis) - NEW MEXICO - Infesting boxelder trees at State College. (Durkin).

APHIDS - OKLAHOMA - Abundant on ornamentals throughout State. (Thomas, Flora). An aphid tentatively identified as Longistigma caryae common on Chinese elm in Vinita area. (Coppock, Campbell). UTAH - Curling snowball leaves quite generally in northern and central areas. (Knowlton). MARYLAND - Abundant on roses in Montgomery and Prince Georges Counties. (U. Md., Ent. Dept.). NEW MEXICO - In complex with mites heavy on ornamentals in Las Cruces area. (Durkin).

INSECTS AFFECTING MAN AND ANIMALS

SCREW-WORM (Callitroga hominivorax) - SOUTH CAROLINA - Severe attack in six hereford steers at Lancaster. Steers were dehorned April 19 and no smear used, resulting in worst infestation seen. (DeBruhl).

FLIES - ARIZONA - Flies, mainly Musca domestica population indices of two small towns in southeastern Maricopa and northwestern Pinal Counties average of five highest grill counts in nine blocks, April 29-May 5: 34.0. (Ariz. Coop. Rept.). UTAH - House flies and blow flies numerous generally for this time of year. (Knowlton).

TABANIDS - NORTH CAROLINA - Numerous in flight in New Hanover County. (Cromroy).

SAND FLIES - NORTH CAROLINA - Biting on Wrightsville Beach. (Cromroy).

WOOL MAGGOTS - SOUTH CAROLINA - Number one sheep pest in Piedmont Area. (Cato, May 2).

MOSQUITOES - UTAH - Populations, largely Aedes dorsalis, annoying in the Bountiful area. (Knowlton). NORTH CAROLINA - Adults of Aedes sollicitans flying in Wilmington area, week of April 20. Biting counts per square foot per minute, week ending May 4: Whalebone, Dare County, 168 in sheltered area and 60 in wind; Manteo, Dare County, 11. Biting counts in Wilmington area week of May 10 were 23 per square foot per 10 minutes Larvae numerous in potholes at Palmico Beach. (Cromroy).

CATTLE LICE - TEXAS - Medium, widespread infestations on beef cattle in Hall County. Spraying underway. (Hooser).

SHEEP KED (Melophagus ovinus) - SOUTH CAROLINA - Number two sheep pest of Piedmont area. (Cato, May 2).

TICKS - MISSOURI - Counts of Amblyomma americanum with a few Dermacentor variabilis on livestock in Shannon County range from 80 to slightly over 200 per head. A. americanum more common than last year in Ozarks. (Wingo).

BENEFICIAL INSECTS

LADY BEETLES - ILLINOIS - Adults at 36 per 100 sweeps in east southeastern area in forage crops and 15 in western and west southwestern areas. (Ill. Ins. Rept.).

BIG-EYED BUGS - NEVADA - Numerous in fields infested with pea aphid in Fernley district. (Gallaway).

MISCELLANEOUS INSECTS

CARPET BEETLES (Anthrenus spp.) - IDAHO - A number of reports received of infestations in homes in Idaho Falls area. (Kohl). RHODE ISLAND - Heavy infestations of Attagenus piceus in sub-flooring of Wakefield home. Cause of many inquiries in past month over State. (Caroselli, Steve).

EASTERN SUBTERRANEAN TERMITE (Reticulitermes flavipes) - NORTH CAROLINA - Reports from Davie, Buncombe and Chatham Counties. (Jones, Wright). RHODE ISLAND - Extensive swarming in large numbers throughout State from February to May. (Caroselli).

ELM LEAF BEETLE (Galerucella xanthomelaena) - PENNSYLVANIA - Considerable abundance. (Adams).

OLD HOUSE BORER (Hylotrupes bajulus) - RHODE ISLAND - Light infestation in attic rafters of Wakefield home and in sub-flooring of West Kingston residence. Larvae received from East Greenwich and Hamilton areas. (Caroselli, Steve).

CLOVER MITE (*Bryobia praetiosa*) - NORTH DAKOTA - Numerous and invading homes at Dickinson, Stark County. (N. D. Ins. Rept. Serv.). PENNSYLVANIA - Considerable abundance. (Adams). WISCONSIN - Annoying to humans in Milwaukee and Grant Counties. (Chambers).

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Weather continued from p. 418.

The Rocky Mountain area and High Plains reported little or no precipitation except scattered showers in the mountains. The upper Mississippi Valley and Great Lakes area received the heaviest precipitation of the week with over 4 inches locally in west-central Michigan. Local flooding was reported in the Michigan area. Generous rains fell in the northern Appalachians and New England while dry weather except for local areas continues east of the Appalachians. Generally above normal temperatures prevailed east of the Rocky Mountains except along the northern border and in New England. The center of maximum positive departures from normal was located in eastern Kansas with +12°, with a large area showing a +6° departure. West of the Continental Divide temperatures were below normal with the greatest negative departure -9°. Although the general picture is obtained from averages for the week the temperatures were generally quite variable. For example, North Carolina reported local freezes on Tuesday and Wednesday followed by temperatures in the 90° by the close of the week. California reported cold and showery weather through the 11th and then warm and sunny. Only the Gulf States remained consistently above normal.

On the 12th more than 20 funnel clouds were reported from lower Michigan and severe thunderstorms extended into northern Ohio and as far east as western Pennsylvania. The severest tornado occurred at Flint, Michigan, killing 4 and injuring at least 70 persons. A tornado at Ithaca, Michigan, reportedly killed 1 person and did considerable damage, and 1 at Laingsburg, Michigan, where 15 buildings were destroyed. At Cleveland, Ohio 70 m. p. h., winds caused extensive property damage with 2 persons reported killed and 8 injured. Earlier in the week a verified tornado at Rushmore, Minnesota, (the first in Minnesota this year) caused an estimated $100, 000 property damage, and later, on the 13th, tornadoes were reported in southern Kansas. (Summary Supplied by U. S. Weather Bureau).

LIGHT TRAP COLLECTIONS	Pseud. unipun.	Agrotis ypsilon	Prod. ornith.	Perid. marg.	Feltia subt.	Heliothis zea	Heliothis viresc.	Protoparce sexta	Protoparce quinq.
SOUTH DAKOTA									
Brookings 5/7-10	13	12							
WISCONSIN									
DeForest 5/9-10	5	1							
INDIANA									
Vincennes* To 5/8	61								
ILLINOIS									
Urbana 5/4-10	68	4							
KANSAS									
Manhattan 5/10-12	75					6			
Wathena 5/5-9	28								
Hays 5/1-5	3								
MISSOURI									
Columbia 5/5-11	20	1		1					
TENNESSEE (Counties)									
Shelby 5/1-6	225	62				20			
Madison	126	20		7					
Maury	119	4		4		4			
Robertson	66	8		8					
Knox	45	21		6					
Greene	123	16		4		12			
Blount	134	32		8					
TEXAS									
Beaumont 4/16-30	35	19	33	13		18	2		
Waco 5/5-11	13		4	9	3				
ARKANSAS									
Hope 5/4-10	36	18		20		33			
Van Buren 5/3-10	9								
Varner 5/3-6	2	14		4		6			
Fayetteville 5/5-11	39	27		19		75			
LOUISIANA									
Tallulah* 5/5-11	13	86	103	14	29	23	4	33	3
Baton Rouge 5/5-11	53	19	88	12	127	13			
Franklin 5/5-11	9	19	12	5	26	10			
MISSISSIPPI (Counties)									
Coahoma 5/5-11	124	31	20	21	2	23	2		
Humphreys	1	3	3	1	1	1			
Lauderdale			10		11	4			
Oktibbeha	14	5	24	1	3	18	4		
Washington*	93	85		32		11			
ALABAMA									
Auburn	32	8	7		3	1	1		
GEORGIA (Counties)									
Tift 4/29-5/5		15	7		29	31	2	24	8
Spalding 4/30-5/4	12	1			2	27	1		
FLORIDA									
Belle Glade 4/17-24					3			1	
Homestead 4/12-5/5					27				
Lakeland 4/25-5/3			3		78			5	
Monticello 4/17-5/2			3		2	1			
Sanford 4/13-5/1		3	3		8				
SOUTH CAROLINA (Counties)									
Charleston 4/23-29	3	2			6	6	3		
Florence 4/28-5/4	13	7	3	2	14	39			
Oconee 5/6-12	7								
MARYLAND (County)									
Montgomery 5/1-10	19	8	1	1					

Other Collections: COLORADO - (Rocky Ford, 4/29-5/2): Chorizagrotis auxiliaris, 51; Scotogramma trifolii, 50; Loxostege sticticalis, 192.

*Five traps, Vincennes; three traps, Tallulah; two traps, Washington County.

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A SAMPLING FORK FOR ESTIMATING POPULATIONS OF SMALL ARTHROPODS

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When studies of the biology, ecology, and control of the brown wheat mite (Petrobia latens (Müll.)) were planned, it was first necessary to develop a method of estimating mite populations on various small grains. The first method tried was to dislodge the mites by brushing the host plant back and forth with the hand, and to count those that fell on a white card held beneath the foliage. These mites readily fall to the ground when the plant upon which they are feeding is disturbed. However, this procedure was too slow where large numbers of small-unit samples had to be taken quickly under comparable conditions of temperature, light, and time of day. Population estimates in plots sampled early in the day were not comparable with those taken later. Furthermore, a method was desired in which the samples could be taken to the laboratory and the mites counted under more favorable conditions. The apparatus and technique developed for these studies are described herein.

Description of Fork

In the fall or winter when the plants are small, the most satisfactory population estimates may be made by counting the mites on the foliage of 1-foot sections of planted row, with a head binocular (fig. 1). In the spring and summer after the plants had begun their upright growth, the mites were caused to drop from foliage to adhesive-covered glass slides held in a galvanized-iron sampling fork (fig. 2), similar to one described by Lawson (1). This fork consists of four tines attached to a tubular steel handle that extends from the base at an angle of about 15 degrees. Around the edge of each tine is a retaining rim. The points of the tines are beveled on the bottom to prevent them from digging into the ground when the fork is pushed along the soil surface. The slides are of single-strength window glass, and just large enough to slip into the rectangular chamber of the tine.

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For convenience in handling, four slides are placed in an aluminum clip which has the ends turned back over the slides so that the glass surfaces will not touch when several clips are stacked (fig. 3). Two upturned stops on the back margin of the clip prevent the slides from falling out. While held in the clip, the upper surfaces of the four slides are coated by brushing with a hot mixture of mineral oil and vaseline. The proportion of the two ingredients depends upon field temperatures. The mixture should be fluid enough to spread uniformly in a thin film over the slide without showing brush marks, but firm enough not to flow under high temperatures. Brush marks greatly hinder the counting, as only those mites directly above white areas showing through the glass slides are counted, and the uneven refraction of light through irregular adhesive surfaces obscures the outline of these areas. Three parts of mineral oil to one of vaseline is satisfactory; the proportion of vaseline is increased with higher temperatures and decreased with lower ones. The mixture may be applied cold, but it is more difficult to avoid leaving brush marks when applying a thin film.

After the slides have been coated, they are stacked in one side of a metal slide box (fig. 4). This box has two compartments--one for carrying the clean, coated slides to the field and the other for holding the slides after the mites have been collected. Three of these slide boxes are placed in a metal case for carrying to the field (fig. 5). A large number of the slides may be coated and held indefinitely in these carrying cases for future sampling.

In the field to be sampled a slide box is removed from the carrying case and taken to the sampling site. A clip of slides is taken from the box and rested on the flat surface of the fork. The slides are then removed individually from the clip and inserted in the tines of the fork with the adhesive surface on top, being held in position by the retaining rim (fig. 6). The sampling fork is then ready for use.

Using the Fork

The fork containing the coated slides is inserted through the base of the plant at ground level (fig. 7), and the foliage is disturbed by brushing with the hand so that the mites will drop to the ground; those that fall on the slides are held by the adhesive. The fork is then withdrawn and the slides are replaced in the clip. The bottom or outside top margin of the clip is labeled with a lead pencil as to sampling site, date, host, or other desired data. The clip of slides is then returned to the holding box, and when all the collections have been made the box is placed in the carrying case and brought back to the laboratory for counting. The samples may be held in good condition for many days in the refrigerator.

Counting the Mites

For counting the specimens a thin transparent celluloid card is inserted between the glass slides and the metal clip. This counting card (fig. 8) has four white areas 1/4 or 1/8 inch wide and 4 1/4 inches long, so arranged that they will coincide with the approximate centers of the four slides when the card is shoved tightly against the retaining stops. The white areas may be made with plastic paint or plastic tape. Counting is done with reflected light from an ordinary microscope lamp.

When a card containing 1/4-inch strips is used, each slide represents a sample area of 1.06 square inches, and each fork 4.25 square inches (approximately 1 inch of planted row). When a 1/8-inch strip is used, one-half these areas are represented. No statistical differences were observed between counts made with the two areas. Other types of counting patterns may be used, such as four 1/4- by 1-inch areas placed one above the other in the center or run diagonally across the card. The differences between such patterns did not exceed 4 percent.

If the number of mites present over the counting area is not sufficient for an adequate count, the entire slide may be examined under lower power. Furthermore, where low populations occur or slide-carrying space is limited, as on an extended survey, a composite sample may be taken on a single set of four slides, and so labeled.

After the counts have been completed, the slides are placed in a cylindrical wire screen basket and submerged in a solvent (fig. 9) where they are agitated a few times and then allowed to soak to dissolve the mineral oil and vaseline. The clean slides may then be wiped with a rag or placed in hot water and spread out on a rack to dry. If cleaner slides are desired, they may be agitated in hot, soapy water after being removed from the solvent, and then rinsed in hot water. The metal clips are cleaned by wiping with a rag moistened with solvent, or soaking in the solvent and then wiping.

Other Uses of the Sampling Fork

The sampling fork was found to be very satisfactory for estimating populations of the spotted alfalfa aphid and various species of thrips and other insects found in alfalfa fields. However, the optimum proportion of mineral oil and vaseline varies with the insects being collected. For example, a 5 to 1 mixture retained practically all the aphids, whereas a few were able to escape when 3 parts of mineral oil to 1 part of vaseline was used. When several species are present, the proportion should be the one that will catch those insects most likely to escape. By this procedure the fork should be practicable for sampling any small athropod attacking small grains that has a tendency to fall when the plant is disturbed.

The color of the counting area on the celluloid card should vary with the color of the insect. For example, for the spotted alfalfa aphid, which is pale greenish yellow, a dark background should be used. For the brown wheat mite and other dark species a white background is the most satisfactory.

Literature Cited

(1) Lawson, F. R., D. E. Fox, and W. C. Cook
1941. Three new devices for measuring insect populations.
U. S. Bur. Ent. and Plant Quar. E-183, 6 pp.

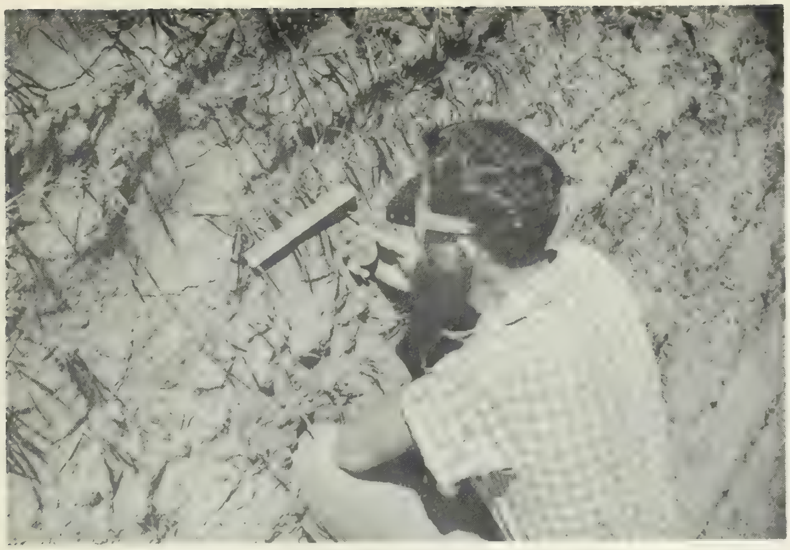

Figure 1.--Counting brown wheat mites on small wheat plants in 1-foot sections of planted row with head binocular.

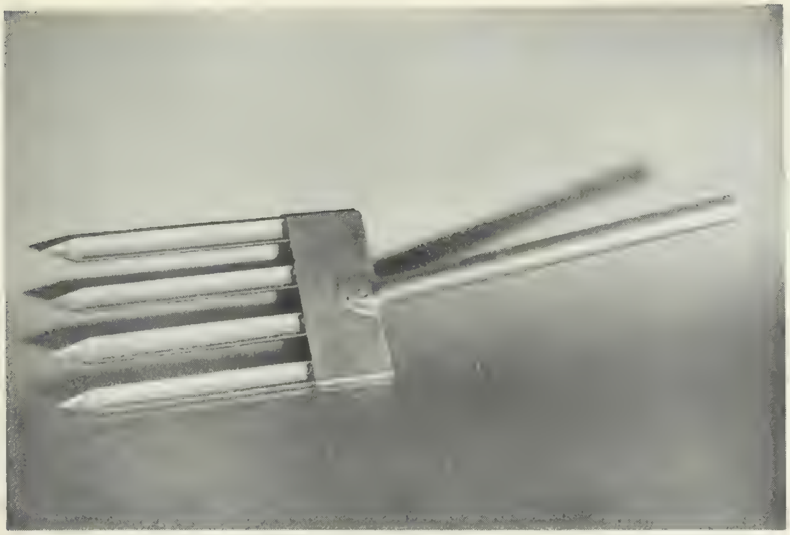

Figure 2.--Sampling fork for collecting brown wheat mites from foliage of small grains for counting.

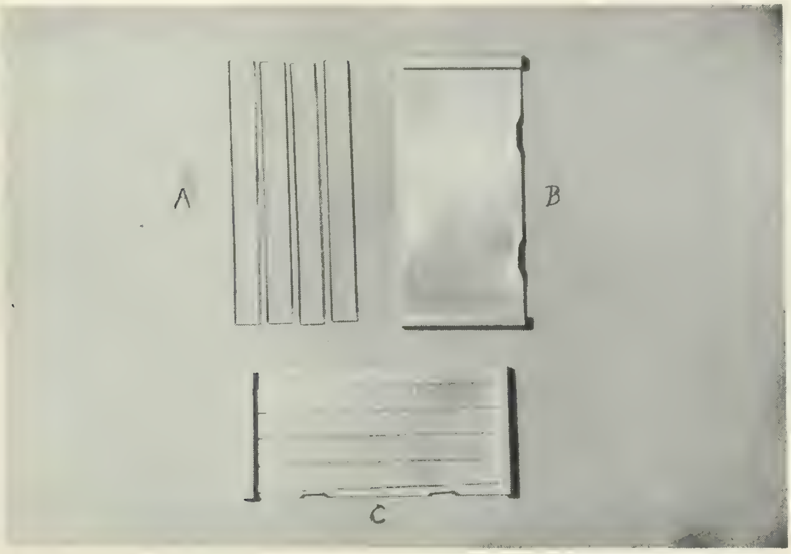

Figure 3.--A, glass slides; B, aluminum clip; C, glass slides in clip ready for application of adhesive.

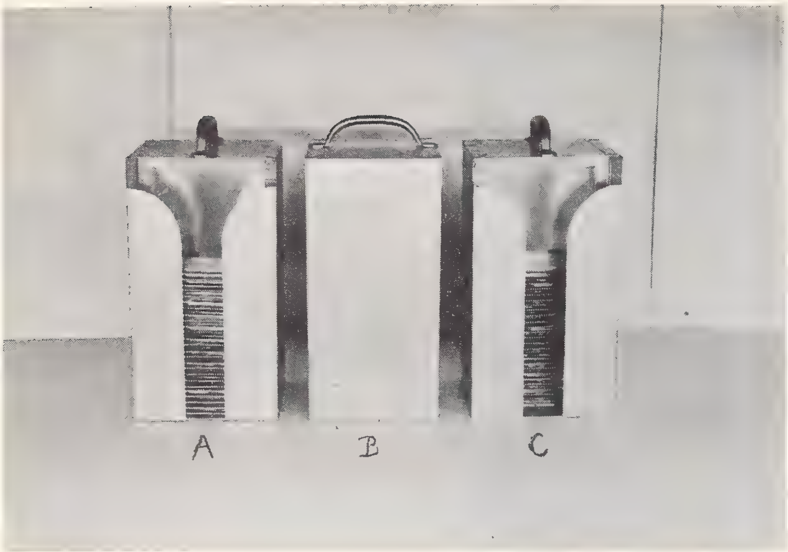

Figure 4.--Slide box for carrying clips of coated slides to sampling site; A, front view showing empty slides stacked in front compartment; B, side view; C, front view showing slides in rear compartment after collections have been taken.

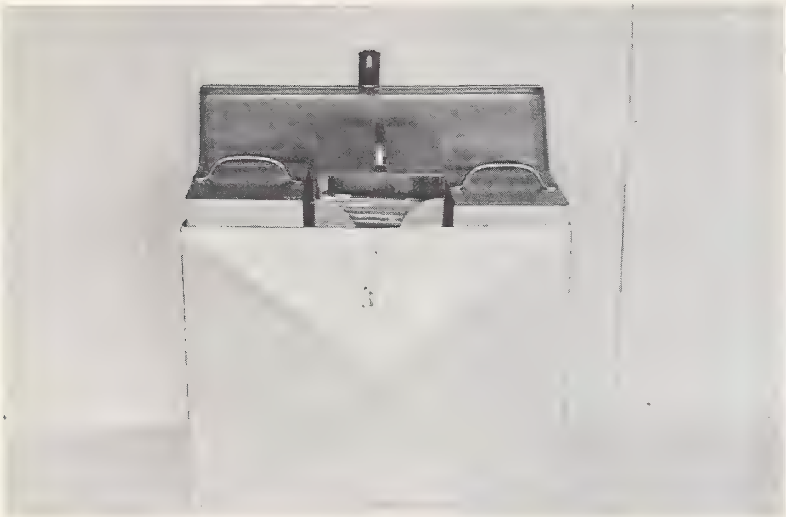

Figure 5.--Carrying case for holding three slide boxes.

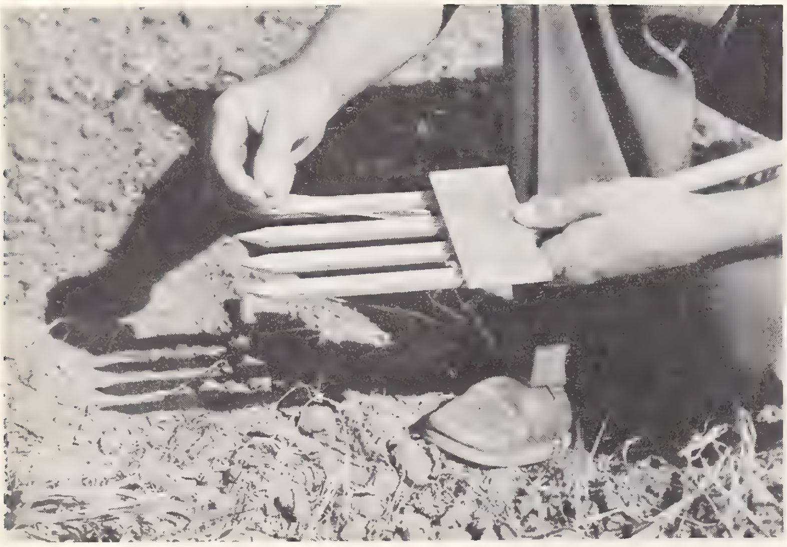

Figure 6.--Inserting coated slides in tines of sampling fork before taking collection.

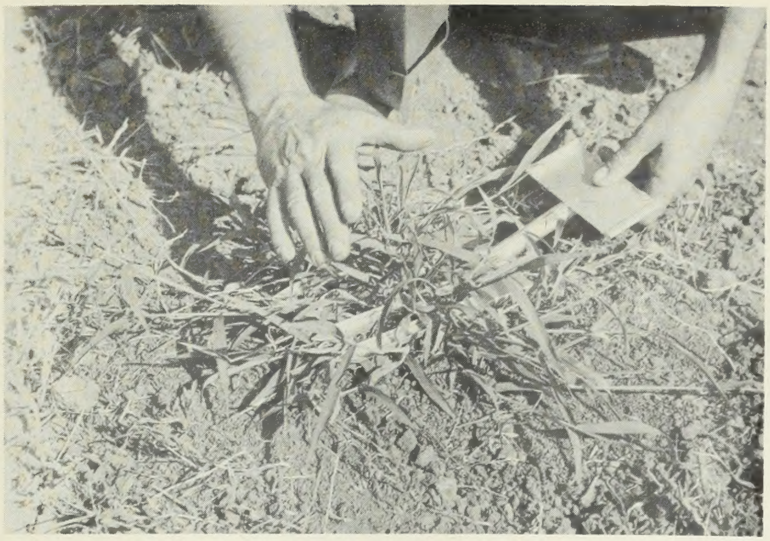

Figure 7.--Sampling clump of grass for populations of brown wheat mite.

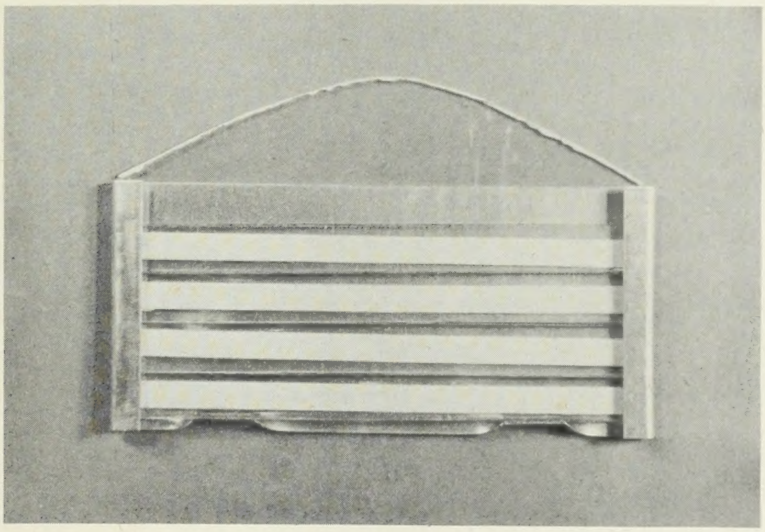

Figure 8.--Celluloid counting card inserted between glass slides and metal clip. White counting areas are 1/4 inch wide.

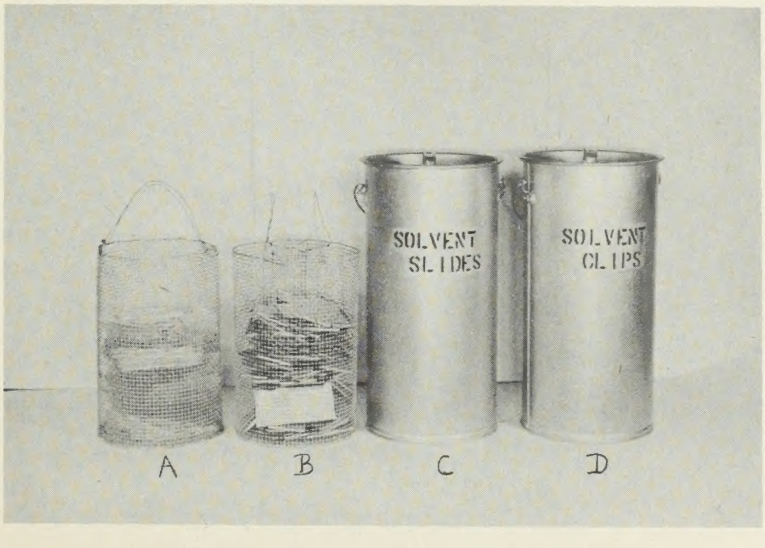

Figure 9.--Apparatus used in cleaning slides: A, Wire basket of clips ready for soaking in solvent; B, basket of clips; C, cream can containing solvent for cleaning slides; D, solvent for cleaning clips.

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